

CLAIMS

1. A dielectric barrier discharge lamp lighting
device for driving a dielectric barrier discharge lamp
5 having an inner electrode and an external electrode,
comprising:

a transformer that includes a primary coil and a
secondary coil, and supplies a driving voltage to the
dielectric barrier discharge lamp from the secondary coil;
10 and

a driving circuit that controls an input voltage
to the transformer to supply the driving voltage with a
driving frequency f_d to the dielectric barrier discharge
lamp,

15 wherein a self-resonant frequency f_r of the
secondary coil, which is measured with the primary coil of
the transformer being open, is equal to the driving
frequency f_d or a frequency in the vicinity of the driving
frequency f_d .

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2. The dielectric barrier discharge lamp lighting
device according to claim 1, wherein the self-resonant
frequency f_r is set to satisfy $0.9f_d \leq f_r \leq 1.3f_d$.

25 3. The dielectric barrier discharge lamp lighting
device according to claim 1, wherein the self-resonant
frequency f_r is set to satisfy $0.95f_d \leq f_r \leq 1.25f_d$.

4. The dielectric barrier discharge lamp lighting
30 device according to claim 1, wherein the self-resonant

frequency f_r is set to satisfy $1.0f_d \leq f_r \leq 1.2f_d$.

5. The dielectric barrier discharge lamp lighting device according to any one of claims 1 to 4, wherein the
5 driving voltage is a voltage having a substantially rectangular waveform.

6. The dielectric barrier discharge lamp lighting device according to any one of claims 1 to 4, wherein the
10 driving circuit includes a push-pull inverter.

7. The dielectric barrier discharge lamp lighting device according to any one of claims 1 to 4, wherein the driving circuit includes a half-bridge inverter.